

WE CLAIM:

1. A biocidal composition comprising:
 - (a) a filler in an amount of about 50% by weight;
 - (b) an organic acid in an amount of about 20% by weight;
 - (c) sodium bromide in an amount of about 10% by weight; and
 - (d) a halogen-releasing compound in an amount of about 10% by weight.
2. The composition of claim 1 further comprising a fragrance.
3. The composition of claim 1 further comprising a dye.
4. The composition of claim 1, wherein the composition is a powder.
5. The composition of claim 1, wherein the composition is a capsule.
6. The composition of claim 1, wherein the composition is a tablet.
7. The composition of claim 6 further comprising a tablet-binding agent.
8. The composition of claim 6, where in the tablet-binding agent is selected from the group consisting of magnesium stearate, calcium stearate, talc, alkali earth metal carbonates, bicarbonates, wax, and mixtures thereof.
9. The composition of claim 1, wherein the filler is selected from the group consisting of alumina, sodium bicarbonate, sodium chloride, potassium chloride, calcium chloride, calcium sulfate, sodium sulfate, potassium sulfate, sodium citrate, sodium acetate, sodium carbonate, potassium fluoride, sodium tripolyphosphate, borax, zinc sulphate, and mixtures thereof.

10. The composition of claim 1, wherein the organic acid is selected from the group consisting of formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, cyclohexanecarboxylic acid, phenylacetic acid, benzoic acid, *o*-toluic acid, *m*-toluic acid, *p*-toluic acid, *o*-chlorobenzoic acid, *m*-chlorobenzoic acid, *p*-chlorobenzoic acid, *o*-bromobenzoic acid, *m*-bromobenzoic acid, *p*-bromobenzoic acid, *o*-nitrobenzoic acid, *m*-nitrobenzoic acid, *p*-nitrobenzoic acid, phthalic acid, isophthalic acid, terephthalic acid, salicylic acid, *p*-hydroxybenzoic acid, anthranilic acid, *m*-aminobenzoic acid, *p*-aminobenzoic acid, *o*-methoxybenzoic acid, *m*-methoxybenzoic acid, *p*-methoxybenzoic (anisic) acid, oxalic acid, malonic acid, succinic acid, glutaric acid, adipic acid, maleic acid, fumaric acid, phthalic acid, isophthalic acid, terephthalic acid, acetyl chloride, propionyl chloride, *n*-butyryl chloride, *n*-valeryl chloride, stearoyl chloride, benzoyl chloride, *p*-nitrobenzoyl chloride, 3,5-dinitrobenzoyl chloride, acetic anhydride, phthalic anhydride, and mixtures thereof.

11. The composition of claim 1, wherein the halogen-releasing compound is selected from the group consisting of sodium dichloroisocyanurate, trichloroisocyanuric acid, calcium hypochlorite, chlorinated hydantoin, N-chlorinated cyanuric acid derivatives, N-chlorosuccinimide, sodium *p*-toluenesulfochloramine, dichlorosuccinimide, bromochloro-methyl-ethyl-hydantoin, bromochlorodimethyl-hydantoin, 1,3-dichloro-5,5-dimethylhydantoin, alkaline earth metal hypochlorites, and mixtures thereof.

12. The composition of claim 1 further comprising an optional surfactant in an amount of about 4% by weight.

13. The composition of claim 12, wherein the surfactant is selected from the group consisting of alkali metal salts of alkyl substituted benzene sulfonic acids, alkali metal salts of long chain fatty sulphates, alkali metal ether sulfates derived from alcohols and alkyl phenols, alkali metal sulfosuccinates, alkali metal sarcosinates, alkali metal taurides and mixtures thereof.

14. The composition of claim 13 further comprising a halogen scavenger that is selected from hydantoin group.

15. A biocidal composition comprising:

- (a) a filler in an amount of about 25% to about 75% by weight;
- (b) an organic acid in an amount of about 10% to about 40% by weight;
- (c) sodium bromide in an amount of about 5% to about 15% by weight;

and

(d) a halogen-releasing compound in an amount of about 5% to about 15% by weight.

16. The composition of claim 15 further comprising a fragrance.

17. The composition of claim 15 further comprising a dye.

18. The composition of claim 15, wherein the composition is a powder.

19. The composition of claim 15, wherein the composition is a capsule.

20. The composition of claim 15, wherein the composition is a tablet.

21. The composition of claim 20 further comprising a tablet-binding agent.

22. The composition of claim 21, where in the tablet-binding agent is selected from the group consisting of magnesium stearate, calcium stearate, talc, alkali earth metal carbonates, bicarbonates, waxes, and mixtures thereof.

23. The composition of claim 15, wherein the filler is selected from the group consisting of alumina, sodium bicarbonate, sodium chloride, potassium chloride, calcium chloride, calcium sulfate, sodium sulfate, potassium sulfate, sodium citrate, sodium acetate, sodium carbonate, potassium fluoride, sodium tripolyphosphate, borax, zinc sulphate, and mixtures thereof.

24. The composition of claim 15, wherein the organic acid is selected from the group consisting of formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, cyclohexanecarboxylic acid, phenylacetic acid, benzoic acid, *o*-toluic acid, *m*-toluic acid, *p*-toluic acid, *o*-chlorobenzoic acid, *m*-chlorobenzoic acid, *p*-chlorobenzoic acid, *o*-bromobenzoic acid, *m*-bromobenzoic acid, *p*-bromobenzoic acid, *o*-nitrobenzoic acid, *m*-nitrobenzoic acid, *p*-nitrobenzoic acid, phthalic acid, isophthalic acid, terephthalic acid, salicylic acid, *p*-hydroxybenzoic acid, anthranilic acid, *m*-aminobenzoic acid, *p*-aminobenzoic acid, *o*-methoxybenzoic acid, *m*-methoxybenzoic acid, *p*-methoxybenzoic (anisic) acid, oxalic acid, malonic acid, succinic acid, glutaric acid, adipic acid, maleic acid, fumaric acid, phthalic acid, isophthalic acid, terephthalic acid, acetyl chloride, propionyl chloride, *n*-butyryl chloride, *n*-valeryl chloride, stearoyl chloride, benzoyl chloride, *p*-nitrobenzoyl chloride, 3,5-dinitrobenzoyl chloride, acetic anhydride, phthalic anhydride, and mixtures thereof.

25. The composition of claim 15, wherein the halogen-releasing compound is selected from the group consisting of sodium dichloroisocyanurate, trichloroisocyanuric acid, calcium hypochlorite, chlorinated hydantoin, N-chlorinated cyanuric acid derivatives, N-chlorosuccinimide, sodium *p*-toluenesulfochloramine, dichlorosuccinimide, bromochloro-methyl-ethyl-hydantoin, bromochlorodimethyl-hydantoin, 1,3-dichloro-5,5-dimethylhydantoin, alkaline earth metal hypochlorites, and mixtures thereof.

26. The composition of claim 15 further comprising an optional surfactant composition in an amount of about 1% to about 10% by weight.

27. The composition of claim 26, wherein the surfactant composition has a surfactant that is selected from the group consisting of alkali metal salts of alkyl substituted benzene sulfonic acids, alkali metal salts of long chain fatty sulphates, alkali metal ether sulfates derived from alcohols and alkyl phenols, alkali metal sulfosuccinates, alkali metal sarcosinates, alkali metal taurides and mixtures thereof.

28. The composition of claim 26, wherein the surfactant composition further has a halogen scavenger that is select from hydantoin group.

29. A biocidal composition comprising an effective amount of a filler, an effective amount of an organic acid; an effective amount of sodium bromide, an effective amount of a halogen-releasing compound and an effective amount of an optional surfactant.

30. The composition of claim 29 further comprising a fragrance.

31. The composition of claim 29 further comprising a dye.

32. The composition of claim 29, wherein the composition is a powder.

33. The composition of claim 29, wherein the composition is a capsule.

34. The composition of claim 29, wherein the composition is a tablet.

35. The composition of claim 34 further comprising a tablet-binding agent.

36. The composition of claim 35, where in the tablet-binding agent is selected from the group consisting of magnesium stearate, calcium stearate, talc, alkali earth metal carbonates, bicarbonates, and mixtures thereof.

37. The composition of claim 29, wherein the filler is selected from the group consisting of alumina, sodium bicarbonate, sodium chloride, potassium chloride, calcium chloride, calcium sulfate, sodium sulfate, potassium sulfate, sodium citrate, sodium acetate, sodium carbonate, potassium fluoride, sodium tripolyphosphate, borax, zinc sulphate, and mixtures thereof.

38. The composition of claim 29, wherein the organic acid is selected from the group consisting of formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, cyclohexanecarboxylic acid, phenylacetic acid, benzoic acid, *o*-toluic acid, *m*-toluic acid, *p*-toluic acid, *o*-chlorobenzoic acid, *m*-chlorobenzoic acid, *p*-chlorobenzoic acid, *o*-bromobenzoic acid, *m*-bromobenzoic acid, *p*-bromobenzoic acid, *o*-nitrobenzoic acid, *m*-nitrobenzoic acid, *p*-nitrobenzoic acid, phthalic acid, isophthalic acid, terephthalic acid, salicylic acid, *p*-hydroxybenzoic acid, anthranilic acid, *m*-aminobenzoic acid, *p*-aminobenzoic acid, *o*-methoxybenzoic acid, *m*-methoxybenzoic acid, *p*-methoxybenzoic (anisic) acid, oxalic acid, malonic acid, succinic acid, glutaric acid, adipic acid, maleic acid, fumaric acid, phthalic acid, isophthalic acid, terephthalic acid, acetyl chloride, propionyl chloride, *n*-butyryl chloride, *n*-valeryl chloride, stearoyl chloride, benzoyl chloride, *p*-nitrobenzoyl chloride, 3,5-dinitrobenzoyl chloride, acetic anhydride, phthalic anhydride, and mixtures thereof.

39. The composition of claim 29, wherein the halogen-releasing compound is selected from the group consisting of sodium dichloroisocyanurate, trichloroisocyanuric acid, calcium hypochlorite, chlorinated hydantoin, N-chlorinated cyanuric acid derivatives, N-chlorosuccinimide, sodium *p*-toluenesulfochloramine, dichlorosuccinimide, bromochloro-methyl-ethyl-hydantoin, bromochlorodimethyl-hydantoin, 1,3-dichloro-5,5-dimethylhydantoin, alkaline earth metal hypochlorites, and mixtures thereof.

40. The composition of claim 29, wherein the surfactant is selected from the group consisting of alkali metal salts of alkyl substituted benzene sulfonic acids, alkali metal salts of long chain fatty sulphates, alkali metal ether sulfates derived from alcohols and alkyl phenols, alkali metal sulfosuccinates, alkali metal sarcosinates, alkali metal taurides and mixtures thereof.

41. A process for making a biocidal tablet comprising:

- (a) mixing a filler in an amount of about 50 % by weight, an organic acid in an amount of about 20 % by weight, a disinfectant in an amount of about 10% by weight; a halogen-releasing compound in an amount of about 10% by weight; an optional surfactant, and a tablet binding agent to form a dry particulate blend;
- (b) feeding said blend into an appropriately shaped die; and
- (c) compacting said blend at a conventional tableting pressure to form a die-shaped solid tablet.

42. The process of claim 41, wherein said blend further comprises a fragrance.

43. The process of claim 41, wherein said blend further comprises a dye.

44. The process of claim 41, where in the tablet-binding agent is selected from the group consisting of magnesium stearate, calcium stearate, talc, alkali earth metal carbonates, bicarbonates, waxes and mixtures thereof.

45. The process of claim 41, wherein the filler is selected from the group consisting of alumina, sodium bicarbonate, sodium chloride, potassium chloride, calcium chloride, calcium sulfate, sodium sulfate, potassium sulfate, sodium citrate, sodium acetate, sodium carbonate, potassium fluoride, sodium tripolyphosphate, borax, zinc sulphate, and mixtures thereof.

46. The process of claim 41, wherein the organic acid is selected from the group consisting of formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, cyclohexanecarboxylic acid, phenylacetic acid, benzoic acid, *o*-toluic acid, *m*-toluic acid, *p*-toluic acid, *o*-chlorobenzoic acid, *m*-chlorobenzoic acid, *p*-chlorobenzoic acid, *o*-bromobenzoic acid, *m*-bromobenzoic acid, *p*-bromobenzoic acid, *o*-nitrobenzoic acid, *m*-nitrobenzoic acid, *p*-nitrobenzoic acid, phthalic acid, isophthalic acid, terephthalic acid, salicylic acid, *p*-hydroxybenzoic acid, anthranilic acid, *m*-aminobenzoic acid, *p*-aminobenzoic acid, *o*-methoxybenzoic acid, *m*-methoxybenzoic acid, *p*-methoxybenzoic (anisic) acid, oxalic acid, malonic acid, succinic acid, glutaric acid, adipic acid, maleic acid, fumaric acid, phthalic acid, isophthalic acid, terephthalic acid, acetyl chloride, propionyl chloride, *n*-butyryl chloride, *n*-valeryl chloride, stearyl chloride, benzoyl chloride, *p*-nitrobenzoyl chloride, 3,5-dinitrobenzoyl chloride, acetic anhydride, phthalic anhydride, and mixtures thereof.

47. The process of claim 41, wherein the halogen-releasing compound is selected from the group consisting of sodium dichloroisocyanurate, trichloroisocyanuric acid, calcium hypochlorite, chlorinated hydantoin, N-chlorinated cyanuric acid derivatives, N-chlorosuccinimide, sodium *p*-toluenesulfochloramine, dichlorosuccinimide, bromochloro-methyl-ethyl-hydantoin, bromochlorodimethyl-hydantoin, 1,3-dichloro-5,5-dimethylhydantoin, alkaline earth metal hypochlorites, and mixtures thereof.

48. The process of claim 41, wherein the surfactant is selected from the group consisting of alkali metal salts of alkyl substituted benzene sulfonic acids, alkali metal salts of long chain fatty sulphates, alkali metal ether sulfates derived from alcohols and alkyl phenols, alkali metal sulfosuccinates, alkali metal sarcosinates, alkali metal taurides and mixtures thereof.

49. The process of claim 41, wherein the step of mixing further includes adding to the blend a halogen scavenger that is selected from hydantoin group.

50. A method of disinfecting water comprising adding to the water a biocidal effective amount of a biocidal composition for a sufficient time as to diminish the microorganism population levels in the water, wherein the biocidal composition comprises:

- (a) a filler in an amount of about 50% by weight;
- (b) an organic acid in an amount of about 20% by weight;
- (c) sodium bromide in an amount of about 10% by weight;
- (d) a halogen-releasing compound in an amount of about 10% by weight; and
- (e) an optional surfactant composition in an amount of about 4% by weight.

51. The method of claim 50, wherein the composition further comprises a fragrance.

52. The method of claim 50, wherein the composition further comprises a dye.

53. The method of claim 50, wherein the composition is a powder.

54. The method of claim 50, wherein the composition is a capsule.

55. The method of claim 50, wherein the composition is a tablet.

56. The method of claim 55, wherein the composition further comprises a tablet-binding agent.

57. The method of claim 56, wherein the tablet-binding agent is selected from the group consisting of magnesium stearate, calcium stearate, talc, alkali earth metal carbonates, bicarbonates, and mixtures thereof.

58. The method of claim 50, wherein the filler is selected from the group consisting of alumina, sodium bicarbonate, sodium chloride, potassium chloride, calcium chloride, calcium sulfate, sodium sulfate, potassium sulfate, sodium citrate, sodium acetate, sodium carbonate, potassium fluoride, sodium tripolyphosphate, borax, zinc sulphate, and mixtures thereof.

59. The method of claim 50, wherein the organic acid is selected from the group consisting of formic acid, acetic acid, propionic acid, butyric acid, valeric acid, caproic acid, caprylic acid, capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid, linoleic acid, linolenic acid, cyclohexanecarboxylic acid, phenylacetic acid, benzoic acid, *o*-toluic acid, *m*-toluic acid, *p*-toluic acid, *o*-chlorobenzoic acid, *m*-chlorobenzoic acid, *p*-chlorobenzoic acid, *o*-bromobenzoic acid, *m*-bromobenzoic acid, *p*-bromobenzoic acid, *o*-nitrobenzoic acid, *m*-nitrobenzoic acid, *p*-nitrobenzoic acid, phthalic acid, isophthalic acid, terephthalic acid, salicylic acid, *p*-hydroxybenzoic acid, anthranilic acid, *m*-aminobenzoic acid, *p*-aminobenzoic acid, *o*-methoxybenzoic acid, *m*-methoxybenzoic acid, *p*-methoxybenzoic (anisic) acid, oxalic acid, malonic acid, succinic acid, glutaric acid, adipic acid, maleic acid, fumaric acid, phthalic acid, isophthalic acid, terephthalic acid, acetyl chloride, propionyl chloride, *n*-butyryl chloride, *n*-valeryl chloride, stearoyl chloride, benzoyl chloride, *p*-nitrobenzoyl chloride, 3,5-dinitrobenzoyl chloride, acetic anhydride, phthalic anhydride, and mixtures thereof.

60. The method of claim 50, wherein the halogen-releasing compound is selected from the group consisting of sodium dichloroisocyanurate, trichloroisocyanuric acid, calcium hypochlorite, chlorinated hydantoin, N-chlorinated cyanuric acid derivatives, N-chlorosuccinimide, sodium *p*-toluenesulfochloramine, dichlorosuccinimide, bromochloro-methyl-ethyl-hydantoin, bromochlorodimethyl-hydantoin, 1,3-dichloro-5,5-dimethylhydantoin, alkaline earth metal hypochlorites, and mixtures thereof.

61. The method of claim 50, wherein the surfactant composition has a surfactant that is selected from the group consisting of alkali metal salts of alkyl substituted benzene sulfonic acids, alkali metal salts of long chain fatty sulphates, alkali metal ether sulfates derived from alcohols and alkyl phenols, alkali metal sulfosuccinates, alkali metal sarcosinates, alkali metal taurides and mixtures thereof.

62. The method of claim 61, wherein the surfactant composition further has a halogen scavenger that is selected from hydantoin group.